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ABSTRACT

The term "scaffolding" refers to adult behaviors that support and guide children's participation in activities, including speech events, enabling the children to extend the range of what they are able to do without assistance. A study examined how scaffolding behavior in support of expository discourse differed among preschool teachers in classroom activities with the same children. Study participants included 12 preschool children who participated in activity sessions (e.g., free play, making paper flowers, or making sandwiches) with three teachers in the Psychology Department nursery of the University of Edinburgh. Classroom discourse was recorded and transcribed, and sections in which a child's expository proposition was followed by adult responses that were semantically contingent upon the child's utterance were analyzed. The adults' responses were coded using social interactionist labels and tallied in terms of the scaffolding functions provided; e.g., shaping the child's utterance or representation through feedback; reinforcing a key phrase; maintaining joint attention; linking propositions to experience; and extending the proposition to a greater number of implications. The study found less scaffolding with 5-year-olds than 3- or 4-year-olds, though the questioning function increased with age. The amount of scaffolding provided differed among the teachers, but the distribution by type of scaffolding was remarkably consistent for all adults. (AC)

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Scaffolding Children's Informal Expository Discourse Skills

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I. Introduction

The term 'scaffolding' has been applied to adult behaviors which support and guide children's participation in activities, including speech events, enabling children to extend the range of what they would be able to do without assistance. Scaffolding behaviors have been characterized in three important ways: they ensure the child's success, a component referred to as the "rachet" which prevents slippage; they extend the child's competence into new territory; and they decrease as the child assumes more responsibility for the task. The development of this model is attributed to Bruner (78, 83), and to researchers describing the "zone of proximal development" Vygotsky, Wertsch (1985), Rogoff and others. For a thorough discussion see Rogoff 1990 and Cazden 1988.

Rogoff 1990 points out that adult support of children's activities is automatic; it is difficult NOT to do it. Adult assistance in children's activities is often not intended as instruction. It involves active attention and involvement for the sake of conversation or entertainment or achievement of immediate practical goals, but may not be regarded by the participants as a lesson. This characterization of scaffolding as spontaneous involvement for the sake of conversation (when the task is discourse) points to the special richness of classroom conversations between students and teachers in the school setting. Instructional value can be inferred from all teacher behavior due to the designation of the teacher role.

The scaffolding model is a general one, and raises many questions about how specific adults truly extend the performance of specific children in specific settings. This paper examines how scaffolding behavior might differ among adults (teachers) in activities with the same children in a preschool classroom setting. The analysis focuses on the scaffolding of a specific task, the task of expository discourse.

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II. The Data

The language data I have used in this investigation of classroom discourse was collected and transcribed by Virginia Mueller Gathercole in 1984 and has been reported on in Gathercole 1986, Slobin 1989, and Burns-Hoffman 1992. Twelve preschool children participated in activity sessions with three teachers at

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the nursery of the Psychology Department of the University of Edinburgh. The three adults are the head teacher, the teacher, and the teacher's aide, and each adult is perceived as having a distinctive style of interaction. Four children participated in each age group, 3's, 4's, and 5's. Nine transcripts were analyzed--each adult with each group of children. The school has a play-centered philosophy; the activities recorded were free play, building a lego model, making paper flowers, or making sandwiches.

III. Analysis and Results

The first step in the analysis was to identify the expository utterances in each transcript. What I mean by expository utterances are those utterances which make claims or ask questions about the factual nature of things. In a nursery school setting, one recognizes familiar curriculum items in expository discourse: names for things, attributes of things (color, shape, how many, etc.) and explanations of how things work and are related. Expository contributions are gestures of expertise; informative speech acts which include labelling, identifying, and explaining. Expository contributions are relevant only if they are topical and factual. This genre poses difficulties for children. In a previous analysis of this data, Expository discourse vocabulary was found to be significantly more rare (less familiar) than the vocabulary of other classroom discourse formats (Task Accompaniment, Management, Personal Narrative). Also, children's MLU and MLUL were found to be significantly lower in Expository discourse than in Personal Narrative discourse while adult MLU and MLUL were significantly higher in Expository Discourse (and Management) than Personal Narrative and Task Accompaniment. The proportion of expository utterances averaged 24% of each session with a range of 19-28%.

A few examples of children's expository utterances include:

> I think it's a farm or a zoo.
> Both slices have big holes in the middle.
> I've got a triangle too.
> Why is it there are no brakes?
> Betcha it'll be bigger than yours.

The second step was to narrow expository discourse episodes to those sections in which a child's expository proposition is followed by adult responses which are semantically contingent to the child's utterance. How the child might have been assisted in initiating the proposition is excluded from this analysis.

My perception of the speech event in these cases is that the adult recognizes child propositions as special intellectual efforts and reinforces those efforts and extends them to greater implications--to what we think of as DISCUSSION.

Each adult utterance which was semantically contingent upon the child's expository proposition was coded using a scheme of labels which was motivated for purely descriptive purposes. The

labels are largely familiar from use in the social interactionist language development literature. The coding labels used are presented in Table 1. Note that, wherever possible, the examples are idealized as contingent on the hypothetical child utterance, "I've got two diamonds."

Table 1. Coding Scheme for Adult Responses to Expository Propositions contributed by Children

Example	Code
Two diamonds.	Repetition (phrase)
You've got two diamonds.	Repetition(proposition)
What?	Clarification Request
Diamonds?	Clar. Req. + Repetition
Oh do you?	Verbal Reflective
Oh do you have two diamonds?	Vrbl.Refl. + Repetition
Why?	Wh-Question
Why are they diamonds?	Wh-Q + Repetition
They have four points, don't they?	Y-N Q + Extension
How do they fit in the hole?	Wh-Q + Extension
What color are your diamonds?	Quiz + Repetition
What other shape do you have?	Quiz
(answer to a question)	Model
Tri...	Hint
Yes you do.	Affirm
No you don't.	Neg
These two are diamonds. (pointing)	Index-Present
We had diamonds yesterday.	Index-Memory
I think you do.	Mental State
You have two diamonds too.	Coordinate
You've got three diamonds.	Recast
Two diamonds and a circle.	Expand
Look at what Karen has.	Compare
A big one and a little one.	Contrast
You're rich!	Implicate

The list presented here was sufficient for encoding all the utterances in my sample, but it is not likely that this is an exhaustive list.

The coding scheme is fairly messy and multifunctional: coordinators, indexes of present context, mental state references, affirmations and nagations typically code a part of a clause; most of the other codes refer to clause types, and repetition and extension can combine with clause types. An example of a coded interaction is provided below:

Example of support moves in discourse context: (CHI is 4;2)

CHI: I'm making a lorry.
ADU: That's a very good one. (Index pres., Affirm)
ADU: What does your lorry carry, N? (WH-Extend, Repeat)
CHI: Um, sweet peas.
ADU: Oh, sweet peas. (Repeat)
ADU: Very nice. (Affirm)
CHI: And toys.
ADU: And toys. (Repeat)
ADU: Nice. (Affirm)
ADU: For children? (YN-Extend)
CHI: No, it's rings.
ADU: Rings? (CLRQ-Rep)
CHI: Mommies' rings.
ADU: Oh, jewelry. (Recast)
ADU: Good. (Affirm)
ADU: With pretty stones in them? (YN-Extend)
CHI: Hm?
ADU: With pretty stones in them?
CHI: Mhm.
ADU: So it'll carry them to a jewelry shop. (Coordinate, Implicate)

When considered from a functional point of view, the list of codes overlap in terms of what aspect of scaffolding they supply. The functions served by this list of codes are:

(1) to **SHAPE** the child's utterance or representation through feedback:

Affirm
Negate
Recast
Model
Hint

(2) to **REINFORCE** a key phrase or the proposition through repetition:

Repeat
Expand
Any other move with repeated vocabulary

(3) to **MAINTAIN JOINT ATTENTION** through questions

Clarification Request
Verbal Reflective
Wh-Question
Yes-no Question
Quiz Question

(4) to **LINK** propositions to experience--what the child is doing or seeing or to thought processes of the speaker and hearer or to previous propositions in the discourse:

Index-present
Index-memory
Mental State
Coordinate
Compare/Contrast

(5) to **EXTEND** the proposition to a greater number of implications--the heart of what is thought of as "teaching and learning."

Wh-Question
Yes-no Question
Quiz Question
Model
Expand
Compare/Contrast
Implicate

The next step in the analysis was to tally each of the adult response codes by scaffolding function, e.g. Quiz + Rep ("What color are your diamonds?") is tallied as 1 repetition, 1 MJA, and 1 extension. Table 2 shows the total scaffolding function moves provided by each adult with each age group.

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Table 2. Total Scaffolding Moves by Function for Each Adult with Each Age Group

	Head Teacher			Teacher			Aide		
	3's	4's	5's	3's	4's	5's	3's	4's	5's
Shape	30	26	24	27	24	31	17	29	07
Reinf.	31	38	27	22	23	17	16	25	15
MJAtt.	27	27	16	23	16	22	05	16	25
Link	23	38	29	33	20	18	06	21	11
Extend	31	51	18	31	20	30	11	23	13

One characterization of the scaffold is that adult support will decrease as the child takes an increased responsibility for the task. Table 3 shows the sums of adult support moves by function with each age group.

Table 3. Sums of Adult Support Moves by Function with Each Age Group

	3's	4's	5's
Shape	74	79	62
Rinforce	69	86	59
MJAttention	55	59	63
Link	62	79	58
Extend	73	94	61
Totals	333	397	303

Scaffolding moves do show a general downward trend with age as numbers are lower with five-year-olds than with three and four year olds. This is consistent with a scaffolding model which anticipates less adult activity as the child takes on more responsibility. The questioning function increases with age which can be seen as consistent with the model as well if the nature of the question function has shifted from maintenance of

joint attention to transfer of more responsibility to the child. But a trend that is not consistent with the model is the higher number of adult scaffolding moves used with four-year-olds than with three-year-olds.

To investigate the variability of scaffolding moves as a consequence of individual differences in adult style, support moves were tallied by adult only. Table 4 shows the distribution of supporting moves by function by adult identity.

Table 4. Sums of Adult Support Moves by Function by Adult

	HT	T	A
Shape	80	82	53
Rinforce	96	62	56
MJAttention	70	61	46
Link	90	71	38
Extend	100	81	47
Totals	436	357	240

The distribution is very consistent, proportionally, for all adults across all functions--no functions are particularly low or high compared to the other functions for that teacher. This very narrow range within subjects comes as a surprise since each teacher impresses the viewer as having a very distinct interactional style. The head teacher is assertive and directive, the teacher is sensitive or responsive, and the aide seems almost shy. The consistent distribution of moves within adults suggests that perhaps these functions are dependent on a more general macro-function, the scaffold, which is created as a whole over time. The scaffold may be motivated more by the role of teacher and the nature of conversation than by individual style.

The number of scaffolding moves, however, does show differences between the adults which is likely a difference in style, volubility in particular. In a previous analysis of this data, the head teacher was found to be twice as high in volubility measures (words per minute) as the aide, and the teacher was in the middle (Burns-Hoffman 1992). This difference in volubility can be seen in the number of function moves for each adult. The head teacher makes almost twice as many moves as the aide in all functions.

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So in general it appears that the adults are consistent in supplying the scaffolding functions but differ in how much scaffolding they supply. The scaffold is characterized as enabling the child to do more than what the child could do without adult participation. So how might the difference in quantity of scaffolding moves relate to the outcomes in terms of child performance--the extended performance that the scaffold permits? A rough index of extended performance can be provided by simply counting how many utterances children produced in the expository format and we can compare the ratios of adult support moves to child expository utterances. These numbers are presented in Table 5.

Table 5. Ratio of Adult Support Moves to Child Expository Utterances

	HT	T	A
ADU	436	357	240
CHI	148	118	144
Ratio	2.9	3.0	1.7

If support moves are less literally scaffolding, with its mechanical implications, and are interpreted as richness of input, then the teacher and the head teacher are notably higher than the aide and one might feel that these sessions are quite rich learning environments. In a more mechanistic interpretation of scaffolding, the aide is extremely efficient since she makes the fewest number of scaffolding moves and children produce a relatively high number of expository utterances in her sessions. Another way of looking at extended child performance is to consider the length of children's expository utterances--the model would suggest that with scaffolding, children can produce more complex utterances than without scaffolding. So in a mechanistic sense, more scaffolding might result in longer utterance length of child utterances. But in a previous analysis of this data, children's MLUL in expository discourse had no significant association with adult identity (Burns-Hoffman 1992).

IV. Discussion

This exploration of adult responses to children's expository propositions has relied on numerical data which really can tell us very little about the actual processes of adult scaffolding and child learning. The analysis of verbal behavior coding by scaffolding function does indicate a consistency within adults to provide all of the scaffolding functions in spite of differences in interactional style and volubility. This points to the psychological reality of the scaffold for these adults. But the

characterization of scaffold as a means of extending a child's performance is not at all clear in the context of expository speech events. The model is more clear in the studies of puzzle solving (Wertsch 1984) and in labelling story book pictures (Ninio and Bruner, 1978) where the task is very structured. Much more qualitative methods of analysis, particularly microanalysis of conversation, is needed to address the more substantive questions concerning the role of adult scaffolding in children's expository language development.

The next step in this research effort is to concentrate on all the instances of adult extension and to consider what kinds of rhetorical structures are being motivated/discouraged by teachers and to observe how children's expository discourse is expressed in engagement with teachers.

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